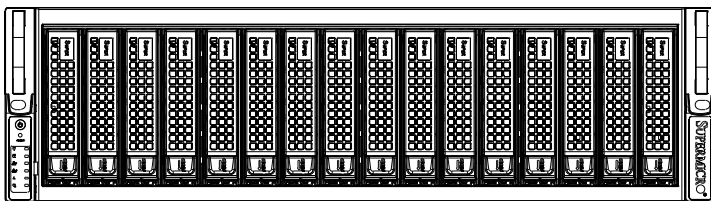


SUPERO[®]

SC936 CHASSIS SERIES



SC936E1-R710B

SC936A-R900B

SC936E1-R900B

SC936E2-R900B

SC936A-R1200B

USER'S MANUAL

1.0c

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software, if any, and documentation may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any medium or machine without prior written consent.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.0c
Release Date: January 20, 2009

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2010 by Super Micro Computer, Inc.
All rights reserved.

Printed in the United States of America

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC936 chassis. Installation and maintenance should be performed by experienced technicians only.

This Supermicro SC936 chassis features a unique and highly-optimized design with Intel/AMD based DP, UP processors. The chassis is equipped with a 900W or 1200W high-efficiency power supply. High-performance fans provide ample optimized cooling for FB-DIMM memory modules and hot-swappable drive bays offer maximum storage capacity.

This document lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC936 chassis. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. It recommended that you thoroughly familiarize yourself installing and servicing this chassis safety precautions.

Chapter 3: System Interface

Refer here for details on this chassis model including the control panel buttons , LEDs and drives

Chapter 4: Chassis Setup and Maintenance

Follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 5: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Appendices

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information.

Table of Contents

Chapter 1 Introduction

1-1	Overview	1-1
1-2	Shipping List.....	1-1
1-3	Where to get Replacement Components.....	1-2
1-4	Contacting Supermicro.....	1-3
1-5	Returning Merchandise for Service.....	1-4

Chapter 2 System Safety

2-1	Overview	2-1
2-2	Warnings and Precautions	2-1
2-3	Preparing for Setup.....	2-1
2-4	Electrical Safety Precautions	2-1
2-5	General Safety Precautions	2-3
2-6	System Safety	2-3

Chapter 3 System Interface

3-1	Overview	3-1
3-2	Control Panel Buttons	3-2
3-3	Control Panel LEDs	3-2

Chapter 4 Chassis Setup and Maintenance

4-1	Overview	4-1
4-2	Removing the Chassis Cover	4-2
4-3	Installing Hard Drives.....	4-4
4-4	Installing the Motherboard	4-5
	I/O Shield	4-5
	Permanent and Optional Standoffs.....	4-5
	Add-on Card/Expansion Slot Setup	4-6
4-5	Installing the Air Shroud.....	4-7
4-6	System Fans	4-8
4-7	Power Supply	4-10

Chapter 5 Rack Installation

5-1	Overview	5-1
5-2	Unpacking the System	5-1
5-3	Preparing for Setup.....	5-1
	Choosing a Setup Location.....	5-1
5-4	Warnings and Precautions	5-2
	Rack Precautions	5-2
	General Server Precautions.....	5-2

5-5 Rack Mounting Considerations 5-3

 Ambient Operating Temperature 5-3

 Reduced Airflow 5-3

 Mechanical Loading 5-3

 Circuit Overloading..... 5-3

 Reliable Ground 5-3

5-6 Rack Mounting Instructions..... 5-4

 Identifying the Sections of the Rack Rails 5-4

 Locking Tabs 5-5

 Releasing the Inner Rail 5-5

 Installing The Inner Rails on the Chassis 5-6

 Installing the Outer Rails on the Rack 5-7

 Standard Chassis Installation 5-8

 Optional Quick Installation Method 5-9

Appendix A Cables, Screws, and Other Accessories

Appendix B Power Supply Specifications

Appendix C SAS-936A Backplane Specifications

Appendix D SAS-936EL Backplane Specifications

Chapter 1

Introduction

1-1 Overview

Supermicro's SC936 3U chassis features a unique and highly-optimized design. The chassis is equipped with high-efficiency redundant power supplies. High-performance fans provide ample optimized cooling for FB-DIMM memory modules and four hot-swappable drive bays offer maximum storage capacity.

1-2 Shipping List

Part Numbers

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model <http://www.supermicro.com/>

SC936A Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC936-R900B	DP/UP	16x SAS Drive Bays	7 FF	900W (Redundant)
SC936A-R1200B	DP/UP	16x SAS Drive Bays	7 FF	1200W (Gold Level)

SC936E1 Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC936E1-R900B	DP/UP	16x SAS/SATA Drive Bays	7 FF	900W (Redundant)
SC936E1-R710B	DP/UP	16x SAS Drive Bays	7 FF	710W DC

SC936E2 Chassis				
Model	CPU	HDD	I/O Slots	Power Supply
SC936E2-R900B	DP/UP	16x SAS/SATA Drive Bays	7 FF	900W (Redundant)

Legend: DP = Dual Processor Support, FF = Full-height, Full-length, UP = Single Processor Support

1-3 Where to get Replacement Components

Although not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors/ System Integrators/Resellers. A list of Supermicro Authorized Distributors / System Integrators/Reseller can be found at: <http://www.supermicro.com>. Click the Where to Buy link.

1-4 Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Asia-Pacific

Address: Super Micro Computer, Inc.
4F, No. 232-1, Liancheng Rd.
Chung-Ho 235, Taipei County
Taiwan, R.O.C.

Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw

Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8226-1900

1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 2

System Safety

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in order given should enable you to have your chassis set up and operational within a minimal amount of time. This quick setup assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

You will also need it placed near at least one grounded power outlet. When configured, the SC936 chassis includes two power supplies. "R" models a redundant power supply and require two grounded outlets.

2-3 Preparing for Setup

The SC936 chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the system into a rack. Please read this manual in its entirety before beginning the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC936 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly disconnect the power from the system.
- Do not work alone when working with high-voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules, DVD-ROM and floppy drives (not necessary for hot-swappable drives). When disconnecting power, first power-down the system with the operating system, and then unplug the power cords from all the power supply modules in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Motherboard battery: CAUTION - There is a danger of explosion if the on-board battery is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.
- DVD-ROM laser: CAUTION - This server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. Most SC936 models have two buttons on the chassis control panel: a reset button and an on/off switch. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

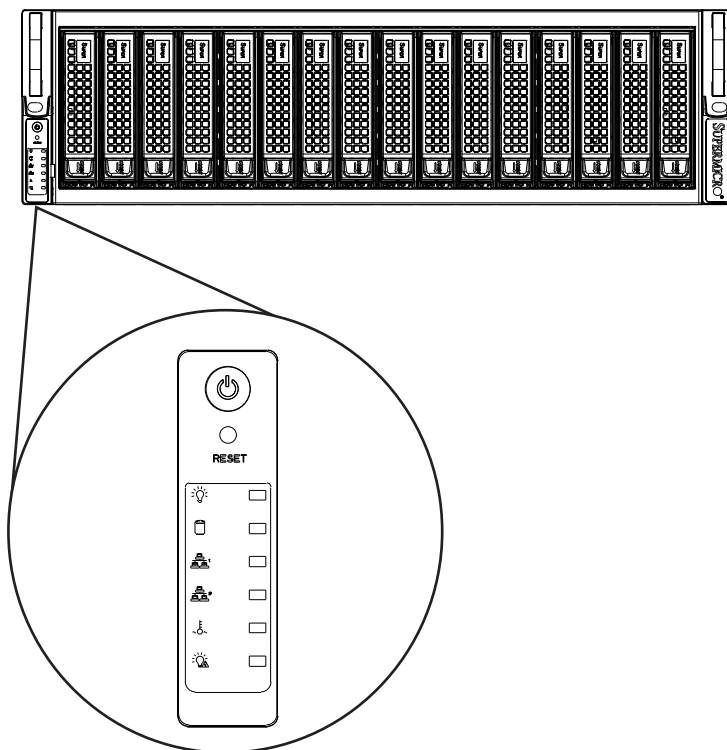


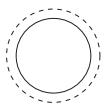
Figure 3-1: Control Panel

3-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from top to bottom) a reset button and a power on/off button.



- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the primary power, but keeps standby power supplied to the system. Therefore, you must unplug system completely before servicing.



- **Reset:** The reset button is used to reboot the system

3-3 Control Panel LEDs

The control panel located on the front of the SC936 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



Power: Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.



HDD: Indicates IDE channel activity, SAS/SATA drives, or DVD-ROM drive activity when flashing.



NIC1: Indicates network activity on GLAN1 when flashing.



NIC2: Indicates network activity on GLAN2 when flashing.



Overheat/Fan Fail: When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.



Power Failure: When this LED flashes, it indicates a failure in the redundant power supply.

Notes

Chapter 4

Chassis Setup and Maintenance

4-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver. Print this page to use as a reference while setting up your chassis.



Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

4-2 Removing the Chassis Cover

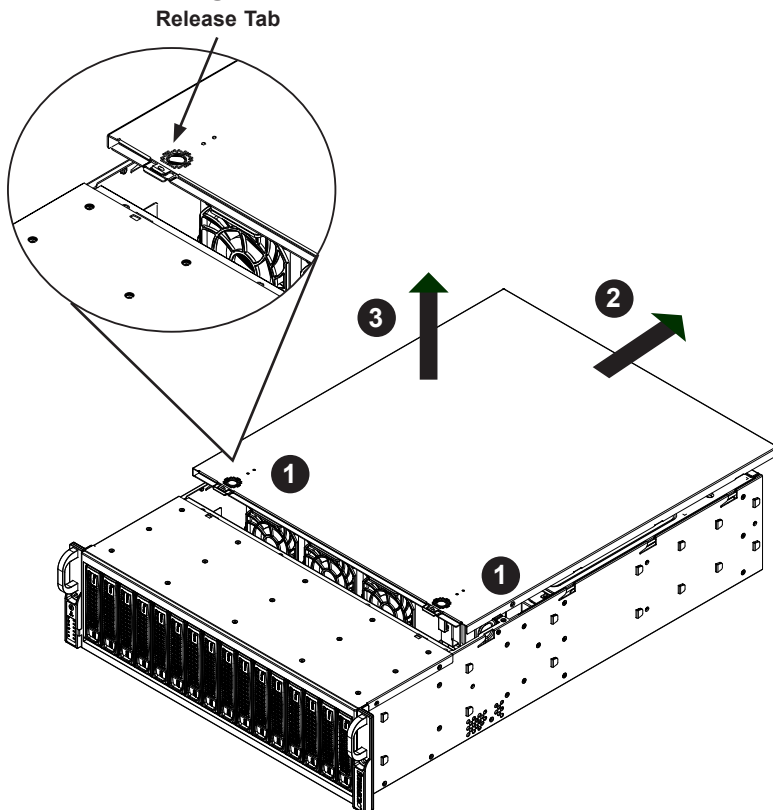


Figure 4-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Press the release tabs to remove the cover from the locked position. Press both tabs at the same time.
2. Once the top cover is released from the locked position, slide the cover back toward the rear of the chassis.
3. Lift the cover off the chassis.



Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

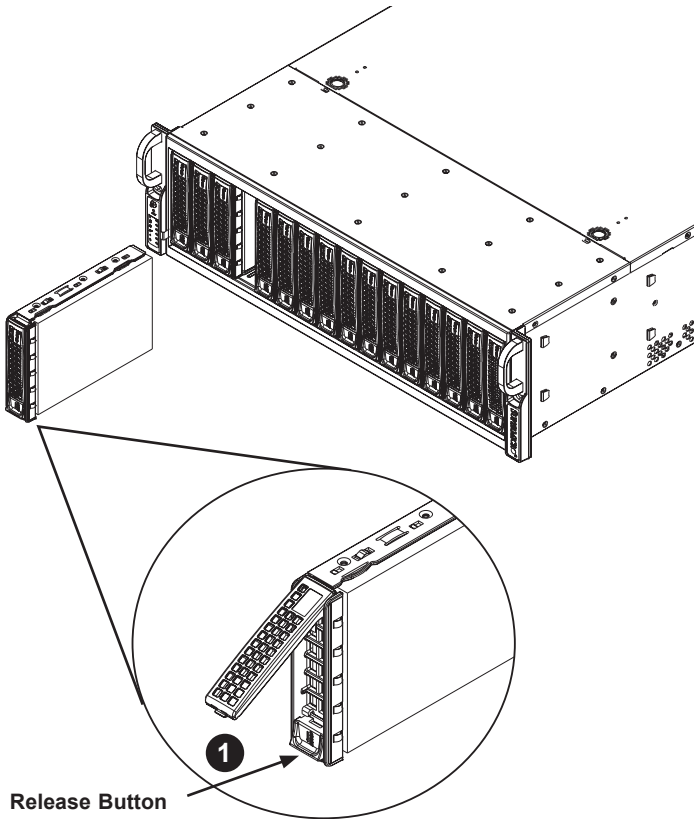


Figure 4-2: Removing Drive Carriers

Removing Hard Drive Carriers from the Chassis

1. Press the release button on the drive carrier. This extends the drive carrier handle.
2. Use the handle to pull the drive out of the chassis. The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow within the drive bays.



Warning: Except for short periods of time (while swapping hard drives), do not operate the server with any drive carrier removed.

4-3 Installing Hard Drives

Installing a Hard Drive to the Hard Drive Carrier

1. Remove the screws securing the dummy drive to the drive carrier.
2. Remove the dummy drive. Place the hard drive carrier on a flat surface such as a desk, table or work bench.

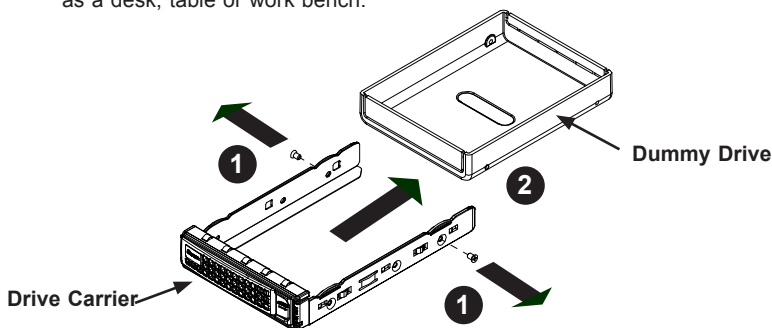


Figure 4-3: Removing the Dummy Drive from Carrier

3. Slide the hard drive into the carrier with the printed circuit board side facing down.
4. Carefully align the mounting holes in both the drive carrier and the hard drive.
5. Secure the hard drive to the carrier using the screws provided.
6. Replace the drive carrier into the chassis. Make sure to close the drive carrier handle to lock the drive carrier into place.

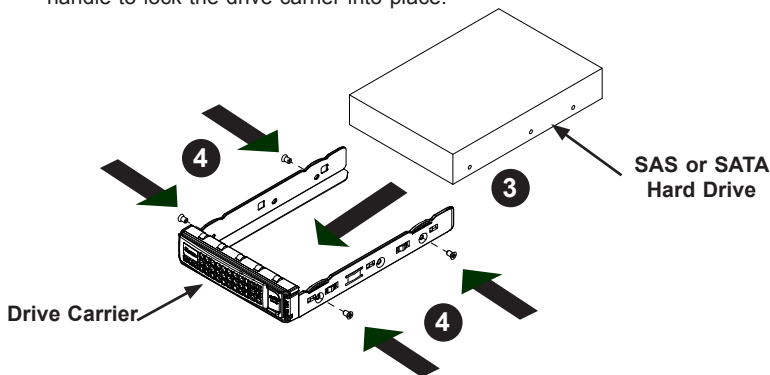


Figure 4-4: Installing the Hard Drive

4-4 Installing the Motherboard

I/O Shield

The I/O shield holds the motherboard ports in place. Install the I/O shield before you install the motherboard.

Installing the I/O Shield

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.
2. Open the chassis cover.
3. With the illustrations facing the outside of the chassis, place the shield into the space provided.
4. Once installed, the motherboard will hold the I/O shield in place.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC936 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC936 accessories packaging.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included to these motherboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up).

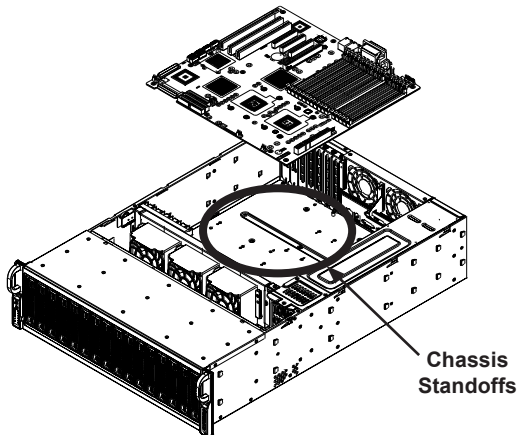


Figure 4-5: Installing the Motherboard

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.
2. Open the chassis cover.
3. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff. To do this:
 - A. Place a hexagonal standoff screw through the bottom the chassis.
 - B. Secure the screw with the hexagon nut (rounded side up).
4. Lay the motherboard on the chassis aligning the permanent and optional standoffs
5. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed 8 pounds of torque when tightening down the motherboard.
6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.
7. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. Also, the fans may be temporarily removed to allow access to the backplane ports.

Add-on Card/Expansion Slot Setup

SC936 chassis include I/O slots for add-on cards and expansion cards. It provides seven low-profile add-on card slots.

Installing Add-on and Expansion Cards

1. Disconnect the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Remove the screw holding the cover in place for each low profile add-on/expansion card slot you want to use. Keep this screw for later use.
3. Connect the add-on cards and/or expansion cards to the mother board.
4. Secure each card to the chassis using the card's L bracket and the screw previously removed.

4-5 Installing the Air Shroud

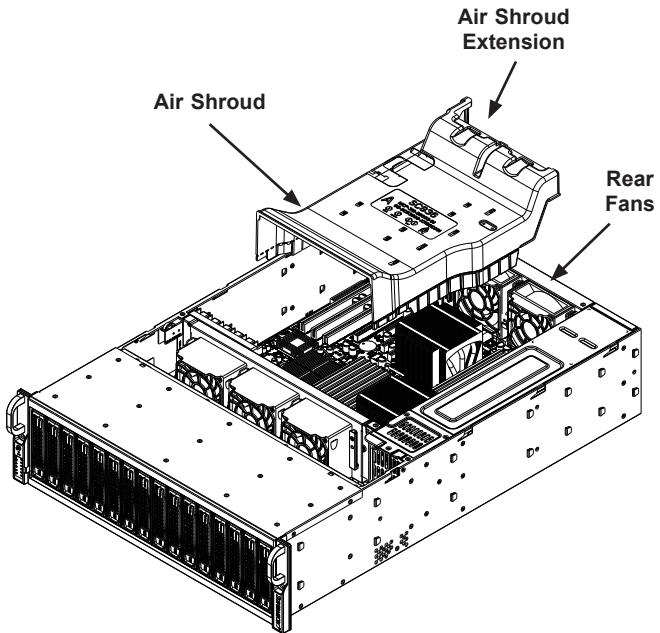


Figure 4-6: Air Shroud for SC936 Chassis

Air shrouds concentrate airflow to maximize fan efficiency. The SC936 chassis air shroud is designed to fit snugly within the chassis, and does not require tools for setup.

Installing the Air Shroud

1. If necessary, remove the rear fan by pressing the fan release tab and pulling the fan from the chassis.
2. Move the cables from the power supply and power distributor to the bottom of the chassis. You may have to bind the cables together.
3. Slide the air shroud extension into the groove behind the fan closest to the power supply. The extension should almost touch the side of the chassis.
4. Slide the air shroud into the chassis. The air shroud connects to the air shroud extension, the two front fans, and two rear fans.

5. The air shroud includes perforations on the bottom. These perforations can be removed if motherboard components interfere with the air shroud placement. Do not remove more perforations than necessary.
6. Install the rear fans by sliding each fan into the fan housing on the chassis.

Checking the Server's Air Flow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
2. Do not operate the server without drive carriers in the drive bays. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.
4. The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons.

In most cases, the chassis power supply and fans are pre-installed. If you need to install fans continue to the Systems Fan section of this chapter. If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions.

4-6 System Fans

Five heavy-duty fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature.

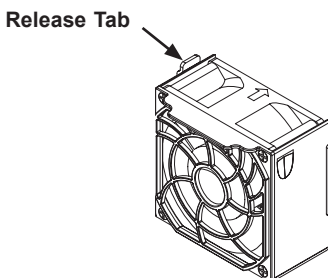


Figure 4-7: System Fan

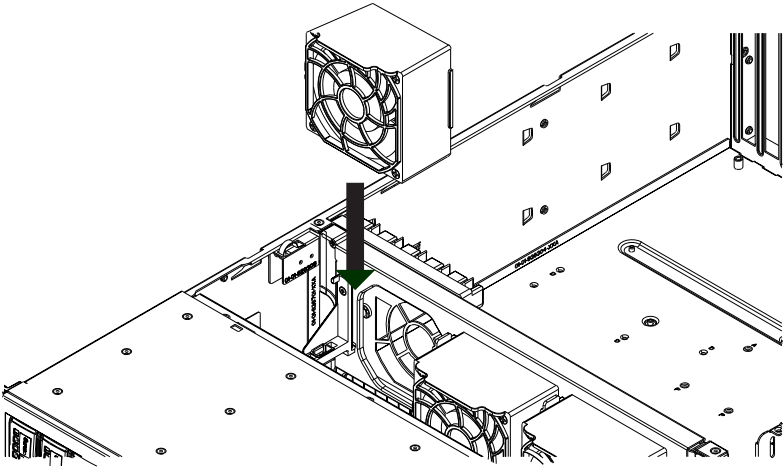


Figure 4-8: Placing the System Fan

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis open.)
2. Turn off the power to the system and unplug the system from the outlet.
3. Remove the failed fan's power cord from the motherboard.
4. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.
5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Power-up the system and check that the fan is working properly before replacing the chassis cover.

4-7 Power Supply

The SC936 chassis has an auto-switching power supply. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light illuminates on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

The SC936 chassis includes a redundant power supply that can be changed without powering down the system. In the unlikely event that one is necessary, a new unit can be ordered directly from Supermicro (see contact information in the Preface).

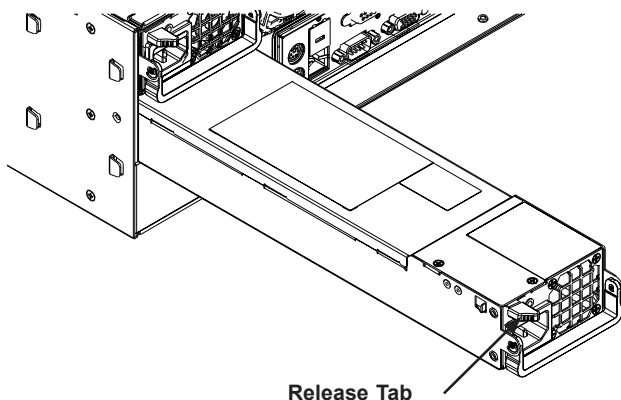


Figure 4-9: Removing the Power Supply

Changing the Power Supply

1. This chassis includes a redundant power supply which allows the server to remain running and one power supply to be removed. Remove the AC power cord from the failed module.
2. Push the release tab on the power supply, as illustrated.
3. Pull the power supply out using the handle provided.
4. Change the failed power module with the same model.
5. Push the new power supply module into the power bay until you hear a click.
6. Plug the AC power cord back into the module and power up the server.

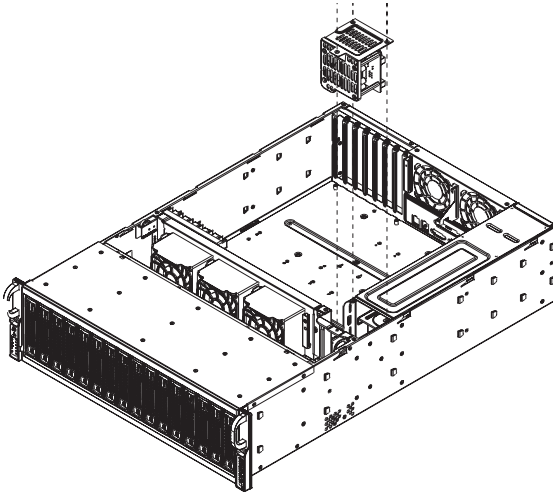


Figure 4-10: Changing the Power Distributor

Server chassis that are 2U or higher require a power distributor. The power distributor provides failover and power supply redundancy. In the unlikely event you must change the power distributor, do following:

Changing the Power Distributor

1. Power down the server and remove the AC power cord from the wall socket or power strip.
2. Remove all cable connections to the power supply from the motherboard, backplane, and other components. Also, remove both power supplies.
3. Locate the power distributor between the power supply and the fan row.
4. Remove the three screws securing the power supply.
5. Gently pull the power distributor from the chassis. Gently guide all the cables through the power distributor housing.
6. Slide the new power distributor module into the power distributor housing. Make that you slide the cables through the bottom of the housing.
7. Reconnect all the power cables, replace the power supply, and insert the AC power cord into the wall.

Notes

Chapter 5

Rack Installation

5-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimal amount of time.

5-2 Unpacking the System

You should inspect the box which the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. The system needs to be placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

5-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies and the mounting screws needed for installing the system into the rack. Also included is an optional square hole to round hole converter bracket, for use in racks with round mounting holes. *Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.*

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).



Warning!



5-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installations, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure that the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work upwards.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

5-5 Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

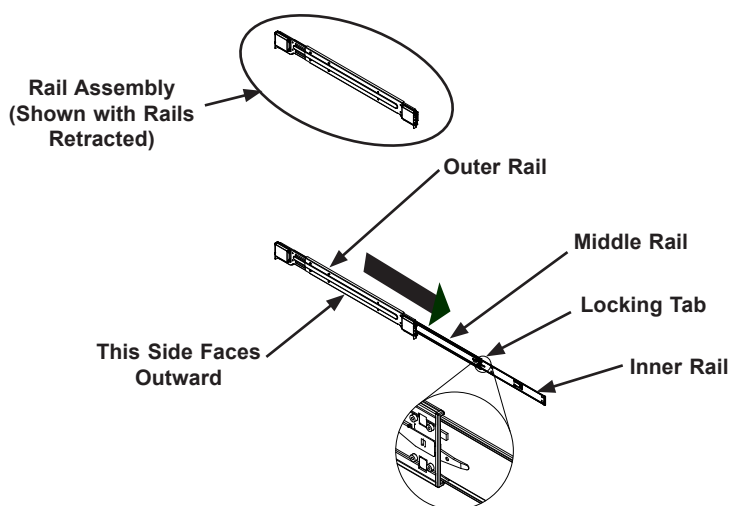
A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

5-6 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **NOTE:** This rail will fit a rack between 26.5" and 36.4" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail which secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.



**Figure 5-1: Identifying the Outer Rail, Middle Rail and Inner Rails
(Left Rail Assembly Shown)**

Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when the chassis is pulled out for servicing.

Releasing the Inner Rail

Releasing Inner Rail from the Outer Rails

1. Identify the left and right outer rail assemblies as described on page 5-4.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Repeat steps 1-3 for the second outer rail.

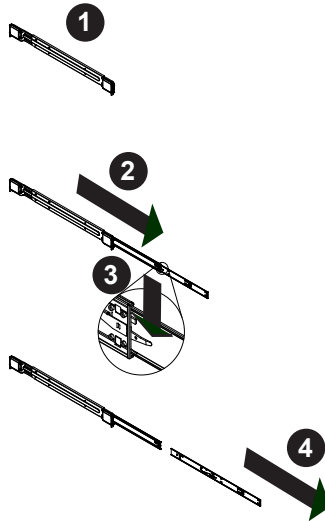


Figure 5-2: Extending and Releasing the Inner Rail

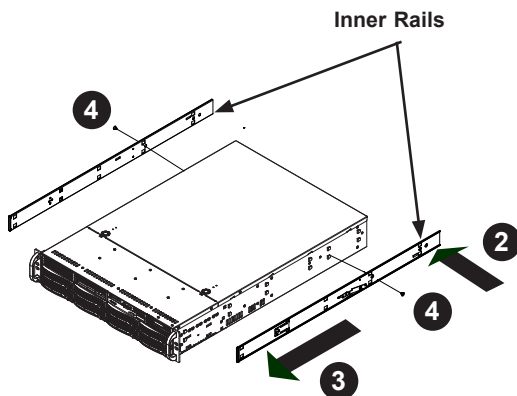


Figure 5-3: Installing the Inner Rails

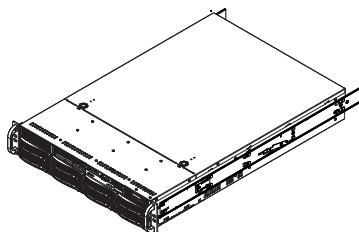


Figure 5-4: Inner Rails Installed on the Chassis
(The chassis above are an example only. Actual chassis may differ slightly)

Installing The Inner Rails on the Chassis

Installing the Inner Rails

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.
4. Secure the inner rail to the chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.

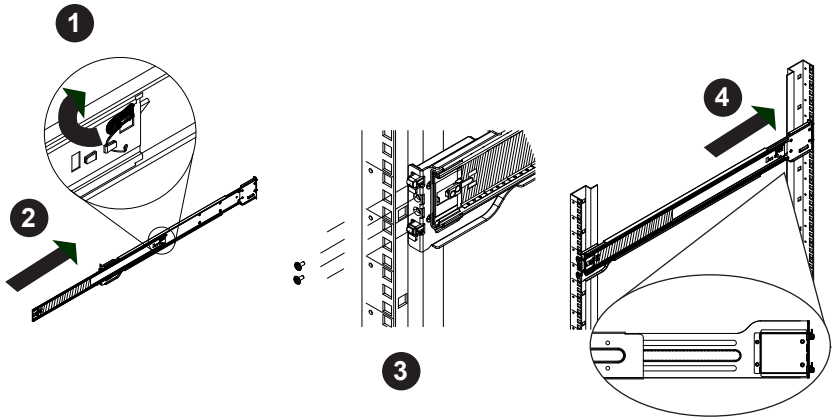


Figure 5-5: Extending and Releasing the Outer Rails

Installing the Outer Rails on the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.

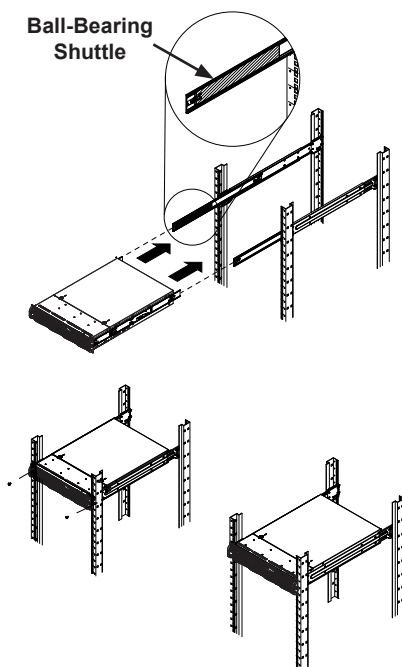


Figure 5-6: Installing into a Rack

Standard Chassis Installation

Installing the Chassis into a Rack

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

Optional Quick Installation Method

The following quick installation method may be used to install the chassis onto a rack.

Installing the Chassis into a Rack

1. Install the whole rail assembly onto the rack as described on page 5-7.
2. Release the inner rail without retracting the middle rail.
3. Install the inner rails on the chassis as previously described on page 5-6.
4. Install the chassis onto the middle rail as described in the previous section.

Notes

Appendix A

Cables, Screws, and Other Accessories

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Cables Included with SC936 Chassis

SC936A-R900B, SC936E1-R900B and SC936E2-R900B			
Part #	Type	Length	Description
CBL-0087	Cable	20"	20" Front control cable Round 16 to 16 pin Ribbon
CBL-0160L	Cable	6'	16AWG Power Cord, 6'
CBL-0217L	Cable	---	16-pin Control Panel Converter Cable

A-3 Compatible Cables

These cables are compatible with the SC936 Chassis.

Alternate SAS Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable

Quantity: 1

Part #: CBL-0175L

Alt. Name: "Big Four"

Description: This cable has one SFF-8484 (32 pin) connector on one end and 4 SAS connectors (7 pins each) at the other. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable

Quantity: 1

Part #: CBL-0116

Alt. Name: iPass or "Small Four"

Description: This cable has one iPass (SFF-8087/mini-SAS) connector (36 pins) at one end and 4 SAS connectors on one end. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Supermicro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	Cable Part #	Length
24 pin	CBL-0042	7.9" (20 cm)
20 pin	CBL-0059	7.9" (20 cm)
8 pin	CBL-0062	7.9" (20 cm)
4 pin	CBL-0060	7.9" (20 cm)

Front Panel to the Motherboard

The SC936 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	Number of Pins (Motherboard)	Cable Part #
16 pin	16 pin	CBL-0049
16 pin	20 pin	CBL-0048
20 pin	20 pin	CBL-0047
16 pin	various*	CBL-0068
20 pin	various*	CBL-0067

* Split cables: Use these cable if your motherboard requires several different connections from the front panel.

A-4 Chassis Screws

The accessory box includes all the screws needed to setup your chassis. This section lists and describes the most common screws used. Your chassis may not require all the parts listed.

M/B



Pan head
6-32 x 5 mm
[0.197]

HARD DRIVE



Flat head
6-32 x 5 mm
[0.197]

DVD-ROM, CD-ROM, and FLOPPY DRIVE



Pan head
6-32 x 5 mm
[0.197]



Flat head
6-32 x 5 mm
[0.197]



Round head
M3 x 5 mm
[0.197]



Round head
M2.6 x 5 mm
[0.197]

RAIL



Flat head
M4 x 4 mm
[0.157]



Round head
M4 x 4 mm
[0.157]



Flat head
M5 x 12 mm [0.472]
Washer for M5



M/B STANDOFFS



M/B standoff
6-32 to 6-32



M/B (CPU)
standoff
M5 to 6-32



Thumb screw
6-32 x 5 mm
[0.197]



1/U M/B standoff
6-32 x 5 mm
[0.197]

Appendix B

Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

SC936A-R900B, SC936E1-R900B and SC936E2-R900B	
Redundant 900W	
MFR Part #	PWS-902-1R
AC Voltage	100 - 240V 50 - 60Hz 13 - 4 Amp
+5V	30 Amp
+5V standby	4 Amp
+12V	75 Amp
-12V	0.6 Amp
+3.3V	24 Amp

SC936A-R1200B, SC936E1-R1200B	
Redundant 1200W	
MFR Part #	PWS-1K21P-1R
AC Input	100 - 140V, 50 - 60Hz, 8 - 11.5 Amp 180 - 240V, 50 - 60Hz, 5.5 - 8 Amp
DC Output +12V	1000W, 83 Amp @ 100-140V 1200W, 100 Amp @ 180-240V 5Vsb: 4A
DC Output with PDB	+5V: 50 Amp +3.3V: 30 Amp -12V: 0.6 Amp

Notes

Appendix C

SAS-936A Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the backplane and peripherals back into their antistatic bags when not in use.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 A Note to Users

All images and layouts shown in this user's guide are based upon the latest revision available at the time of publishing. The backplane you have received may or may not look exactly the same as the graphics shown in this manual.

C-4 Introduction to the SAS-936A Backplane

The SAS-9836A backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS-936A Revision 3.1, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

C-5 Front Connectors

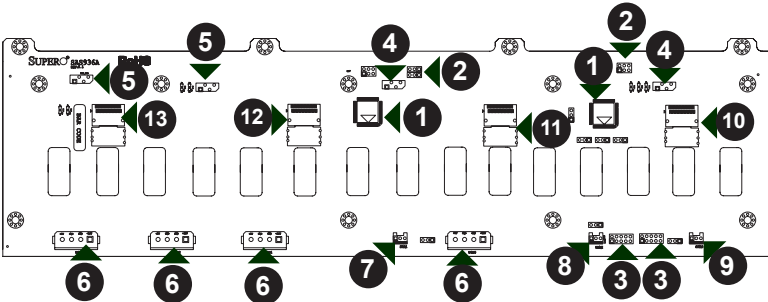


Figure C-1: Front Connectors

Front Connectors

1. Chip: MG9072
2. Upgrade Connectors: JP69 and JP78
3. ACT_IN: JP26 and JP47
4. I²C Connector #1 (JP37) and #2 (JP95)
5. I²C Connector #3 (JP52) and #4 (JP96)
6. Power Connectors (4-pin): JP10, JP13, JP46 and JP48.
7. Fan Connector, Fan#1 JP54
8. Fan Connector, Fan#2 JP56
9. Fan Connector, Fan#3 JP58
10. SAS IN#1 JSM1
11. SAS IN#2 JSM2
12. SAS IN#3 JSM3
13. SAS IN#4 JSM4

C-6 Front Connector and Pin Definitions

1. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

2. Upgrade Connectors

The upgrade connectors are designated JP69, and JP78 are used for manufacturer's diagnostic purposes only.

3. ACT_IN:

The activity LED connectors, designated JP26, and JP47 are used to indicate the activity status of each SAS drive. The activity LED connector is located on the front panel. For the activity LED connector to work properly, connect using a 10-pin LED cable. This is only used when the activity LED is not supported by the hard drive.

SAS Activity LED Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

SAS Activity LED Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	ACT IN#8	6	ACT IN#12
2	ACT IN#9	7	ACT IN#13
3	ACT IN#10	8	ACT IN#14
4	ACT IN#11	9	ACT IN#15
5	Ground	10	Empty

4. and 5. I²C Connectors

The I²C connectors, designated JP37, JP95, JP52, and JP96 are used to monitor HDD activity and status. See the table on the right for pin definitions.

I ² C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

6. Backplane Main Power Connectors

The 4-pin connectors, designated JP10, JP13, JP46 and JP48, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

7., 8. and 9. Fan Connectors

The 3-pin or 4-pin connectors, designated JP54, JP56, and JP58 provide power to the fans. See the table on the right for pin definitions.

Fan Connectors	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	No Connection

10. - 13. SAS IN Ports (Sideband included)

The SAS ports are used to connect the SAS drive cables. The four SAS IN ports are designated #JSM1 - #JSM4. Each port is also compatible with SATA drives.

Note: SGPIO is the default setting for this backplane

Sideband Definitions			
Pin #	Definition	Pin #	Definition
A11	SGPIO: SDIN I²C: Backplane Addressing (SB5)	B11	Controller ID (SB6)
A12	SGPIO: SDOUT I²C: Reset (SB4)	B10	GND (SB2)
A9	GND (SB3)	B9	SGPIO: SLOAD I²C: SDA (SB1)
A8	Backplane ID (SB7)	B8	SGPIO: SCLOCK I²C: SCL (SB0)

C-7 Front Jumper Locations and Pin Definitions

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

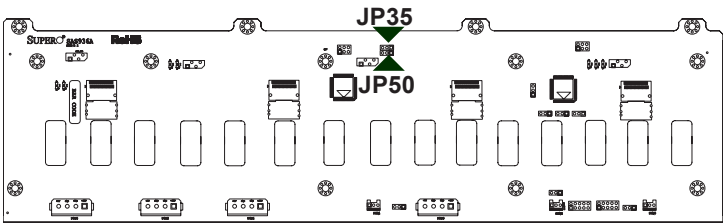
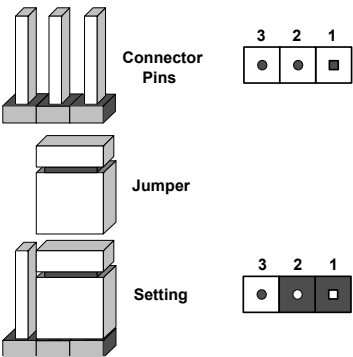


Figure C-2: Jumper Locations

Jumper Settings		
Jumper	Jumper Settings	Note
JP35	1-2: Reset 2-3: Default	MG9072 Chip Reset #1
JP50	1-2: Reset 2-3: Default	MG9072 Chip Reset #2

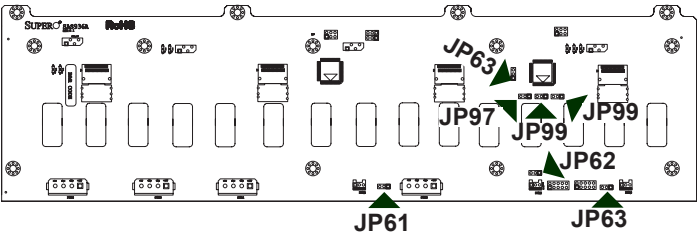


Figure C-3: Fan Jumper Locations

Fan Jumper Settings

This backplane can use up to four fans. To utilize each fan, you must configure **both jumpers** as instructed below.

Fan Jumper Settings		
Jumper	Jumper Settings	Note
JP61	1-2 With Fan (Default) 2-3 No Fan	FAN#1
JP97	1-2 With Fan (Default) 2-3 No Fan	FAN#1
JP62	1-2 With Fan (Default) 2-3 No Fan	FAN#2
JP98	1-2 With Fan (Default) 2-3 No Fan	FAN#2
JP63	1-2 With Fan (Default) 2-3 No Fan	FAN#3
JP99	1-2 With Fan (Default) 2-3 No Fan	FAN#3

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumper. The following information details which jumper must be configured to use SGPIO mode or restore your backplane to I²C mode.

SGPIO (Default) and I ² C Settings		
Jumper	SGPIO (Default) Setting	I ² C Setting
JP84	1-2	2-3

Front LED Indicators

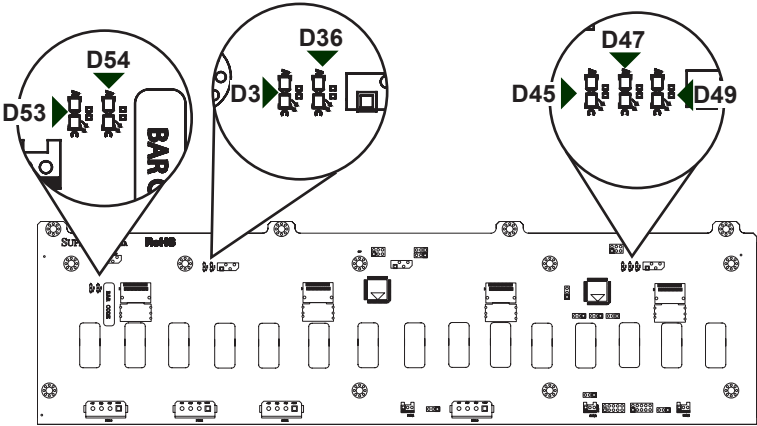


Figure C-4: Front LED Indicators

Front Panel LEDs		
LED	State	Specification
D45	ON	Failure in Fan #1.
D47	ON	Failure in Fan #2.
D49	ON	Failure in Fan #3.
D3	ON	Alarm #1: Overheat/drive failure/fan failure in channels 0-7.
D36	ON	Alarm #2: Overheat/drive failure in channels 8-15.
D53	OFF	+5V : Backplane power failure. Light is on during normal operation.
D54	OFF	+12V : Backplane power failure. Light is on during normal operation.

C-8 Rear Connectors and LED Indicators

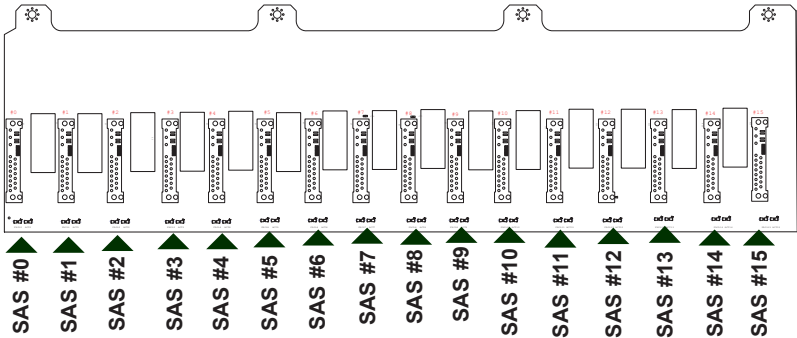


Figure C-5: Rear Connectors and LED Indicators

Rear SAS/SATA Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS/SATA #0	SAS/SATA HDD #0	SAS/SATA #12	SAS/SATA HDD #12
SAS/SATA #1	SAS/SATA HDD #1	SAS/SATA #13	SAS/SATA HDD #13
SAS/SATA #2	SAS/SATA HDD #2	SAS/SATA #14	SAS/SATA HDD #14
SAS/SATA #3	SAS/SATA HDD #3	SAS/SATA #15	SAS/SATA HDD #15
SAS/SATA #4	SAS/SATA HDD #4	SAS/SATA #16	SAS/SATA HDD #16
SAS/SATA #5	SAS/SATA HDD #5	SAS/SATA #17	SAS/SATA HDD #17
SAS/SATA #6	SAS/SATA HDD #6	SAS/SATA #18	SAS/SATA HDD #18
SAS/SATA #7	SAS/SATA HDD #7	SAS/SATA #19	SAS/SATA HDD #19
SAS/SATA #8	SAS/SATA HDD #8	SAS/SATA #20	SAS/SATA HDD #20
SAS/SATA #9	SAS/SATA HDD #9	SAS/SATA #21	SAS/SATA HDD #21
SAS #10	SAS/SATA HDD #10	SAS/SATA #22	SAS/SATA HDD #22
SAS #11	SAS/SATA HDD #11	SAS/SATA #23	SAS/SATA HDD #23

Rear LED Indicators		
Rear LED	Hard Drive Activity	Failure LED
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19
SAS #5	D21	D20
SAS #6	D22	D23
SAS #7	D24	D29
SAS #8	D25	D30
SAS #9	D26	D31
SAS #10	D27	D32
SAS #11	D28	D33
SAS #12	D40	D37
SAS #13	D41	D38
SAS #14	D42	D39
SAS #15	D87	D88

Appendix D

SAS-936EL Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

D-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the backplane and peripherals back into their antistatic bags when not in use.

D-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortages.

D-3 An Important Note to Users

All images and layouts shown in this user's guide are based upon the latest revision available at the time of publishing. The backplane you have received may or may not look exactly the same as the graphics shown in this manual.

D-4 Introduction to the SAS-936EL Backplane

The SAS-9836EL backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS-936EL Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

D-5 Front Connectors and Jumpers

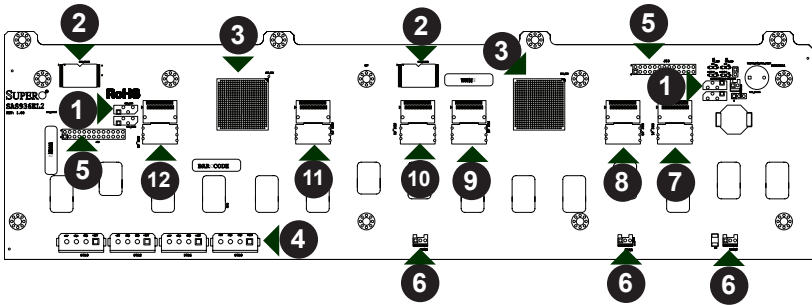


Figure D-1: Front Connectors

Front Connectors

- #1. Primary and secondary I²C connectors (optional).
- #2. Primary and secondary flash Chips.
- #3. Primary and secondary expander chips.
- #4. Power connectors: PWR3, PWR2, PWR1, PWR0.
- #5. EPP connectors, J16 and J15.
- #6. Fan connectors: Fan1, Fan2 and Fan3.
- #7. SAS connectors: PRI_J1.

- #8. SAS connectors: PRI_J0.
- #9. SAS connectors: PRI_J2.
- #10. SAS connectors: SEC_J1 (Not available in EL1 single port back-plane).
- #11. SAS connectors: SEC_J0 (Not available in EL1 single port back-plane).
- #12. SAS connectors: SEC_J2 (Not available in EL1 single port back-plane).

D-6 Front Connector and Pin Definitions

1. Primary and Secondary I²C Connectors

The I²C connectors are used to monitor hard drive activity and status through LED. See the table on the right for pin definitions. There are four total connectors--two primary and two secondary.

These connectors are optional and should only be used by qualified technicians.

I ² C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

2. Primary and Secondary Flash Chips

The primary and secondary flash chips enhance the backplane memory.

3. Primary and Secondary Expander Chips

These primary and secondary expander chips allow the backplane to support dual ports, cascading, and failover.

4. Backplane Main Power Connectors

The 4-pin connectors, designated PWR0, PWR1, PWR2, and PWR3, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

5. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

6. Fan Connectors

The 3-pin connectors, designated Fan1, Fan2, Fan3, and Fan4, provide power to the system fans.

See the table on the right for pin definitions.

Fan Connectors	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

7 - 11. SAS Ports

Note that the primary and secondary sets of SAS ports are in different order. From right to left the ports are Primary A3, A1, and A2 and Secondary B3, B1, and B2.

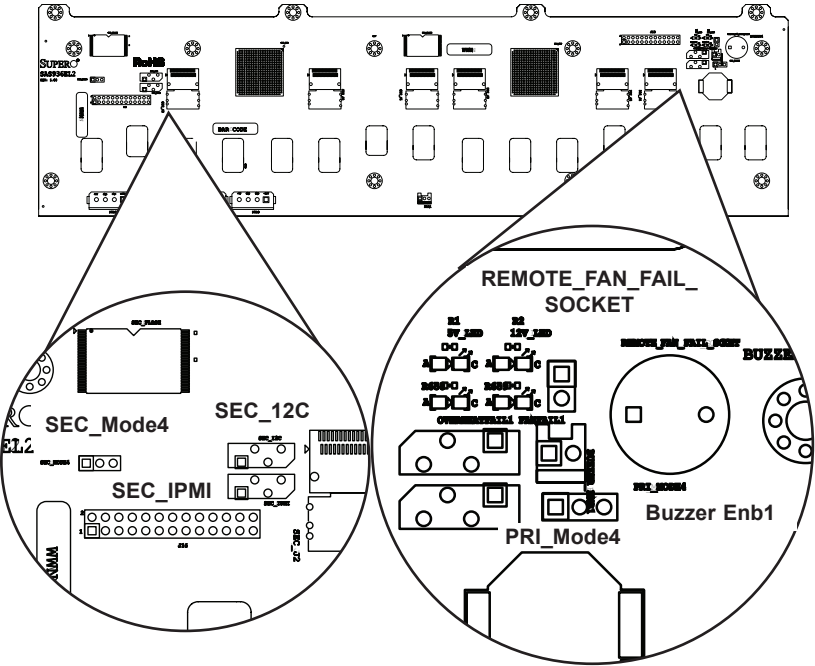


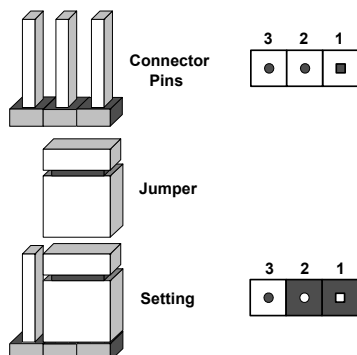
Figure D-2: Front Sockets

Socket Settings		
Socket	Socket Setting	Note
REMOTE_FAN_FAIL_SOCKET	Connected	Front panel fan fail indicator (Optional)

D-7 Front Jumper Locations and Pin Definitions

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. **Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



General Jumper Settings		
Jumper	Jumper Settings	Note
PRI_MODE4	1-2	Factory setting Do not change
PRI_MODE5	2-3	Factory setting Do not change
PRI_BLINK	Open	Factory setting Do not change
SEC_MODE4	1-2	Factory setting Do not change
SEC_MODE5	2-3	Factory setting Do not change
SEC_BLINK	Open	Factory setting Do not change
BUZZER_ENB	Open: Disable Closed: Enable	Buzzer enable*
FAN_ALERT_ENI	Open: Disable Closed: Enable	Fan alert enable

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45° Celsius.

Front LED Indicators

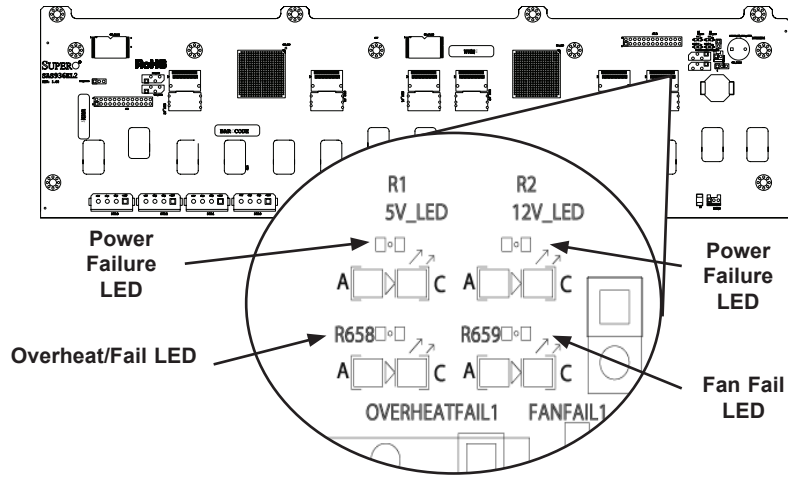


Figure D-3: Front LED Indicators

Backplane LEDs		
LED	State	Specification
OVERHEATFAIL1	ON	Overheat or drive failure
FANFAIL1	ON	Failure in system fans
5V	OFF	Backplane power failure. Light is on during normal operation.
12V	OFF	Backplane power failure. Light is on during normal operation.

D-8 Rear Connectors and LED Indicators

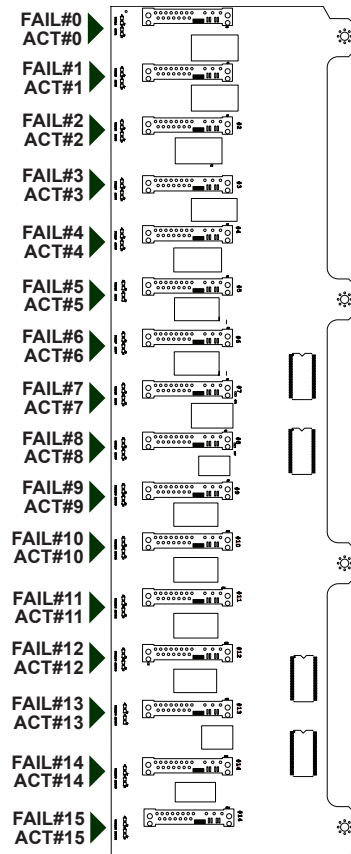


Figure D-4: Rear Connectors and LEDs

Rear SAS Connectors			
Rear Connector	SAS Drive Number	Rear Connector	SAS Drive Number
SAS #J0	SAS HDD #0	SAS #J9	SAS HDD #9
SAS #J1	SAS HDD #1	SAS #J10	SAS HDD #10
SAS #J2	SAS HDD #2	SAS #J11	SAS HDD #11
SAS #J3	SAS HDD #3	SAS #J12	SAS HDD #12
SAS #J4	SAS HDD #4	SAS #J13	SAS HDD #13
SAS #J5	SAS HDD #5	SAS #J14	SAS HDD #14
SAS #J6	SAS HDD #6	SAS #J15	SAS HDD #15

Rear LED Indicators		
Rear LED	Hard Drive Activity	Failure LED
SAS #0	ACT #0	FAIL #0
SAS #1	ACT #1	FAIL #1
SAS #2	ACT #2	FAIL #2
SAS #3	ACT #3	FAIL #3
SAS #4	ACT #4	FAIL #4
SAS #5	ACT #5	FAIL #5
SAS #6	ACT #6	FAIL #6
SAS #7	ACT #7	FAIL #7
SAS #8	ACT #8	FAIL #8
SAS #9	ACT #9	FAIL #9
SAS #10	ACT #10	FAIL #10
SAS #11	ACT #11	FAIL #11
SAS #12	ACT #12	FAIL #12
SAS #13	ACT #13	FAIL #13
SAS #14	ACT #14	FAIL #14
SAS #15	ACT #15	FAIL #15

Dual Port and Cascading Configurations

D-9 Single and Dual Port Expanders

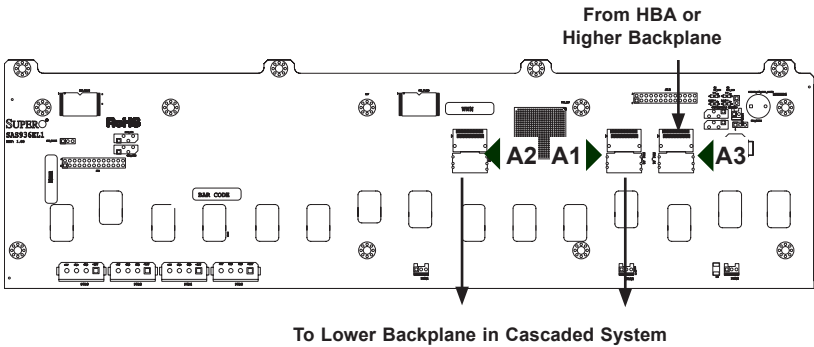
Single Ports

SAS-936EL1 backplanes have a single-port expander that access all 16 drives and supports cascading.

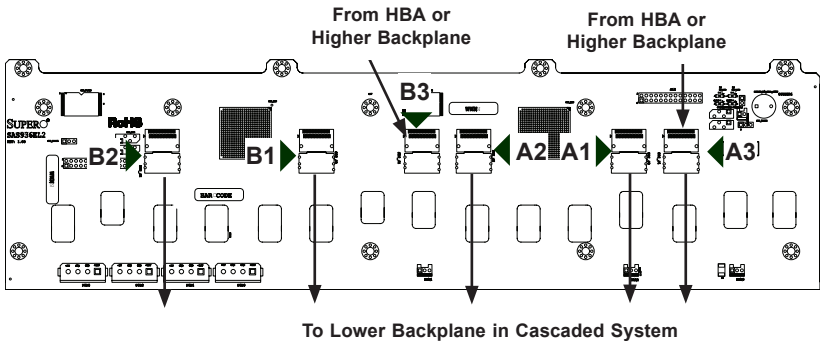
Dual Ports

SAS-936EL2 backplanes have dual-port expanders that access all 16 drives. These dual-port expanders support cascading, failover, and recovery.

SAS-936EL1 Single-Port Backplane



SAS-936EL2 Dual-Port Backplane

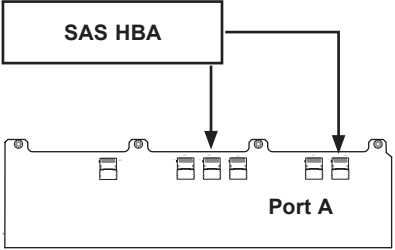


D-10 Failover

The SAS-936EL2 backplane has two expanders which allow effective failover and recovery.

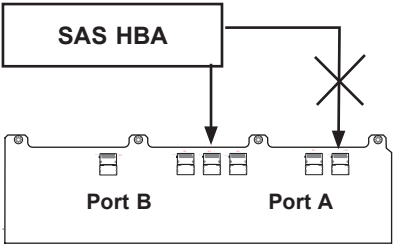
Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).



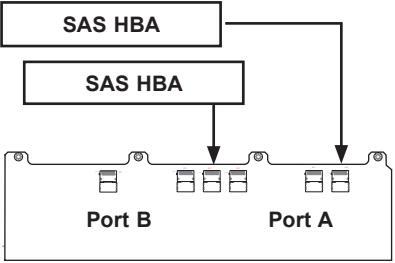
Single Host Bus Adapter Failover

If the expander or data path in Port A fails, the system will automatically fail over to Port B.



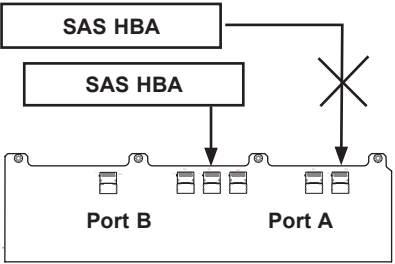
Dual Host Bus Adapter

In a dual host bus configuration, the backplane connects to two Host Bus Adapters (HBA).



Dual Host Bus Adapter Failover

If the expander or data path in Port A fails, the system will automatically fail over to Port B. This maintains a full connection to all drives.



D-11 Cables and Chassis Power Card

Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and, at least one, Host Bus Adapter (HBA). Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS-936 backplane system.

For more information, see the PCC-JBPWR2 power card manual. This manual can be found at the <http://www.supermicro.com> or as an appendix in the SAS-936 chassis manual.

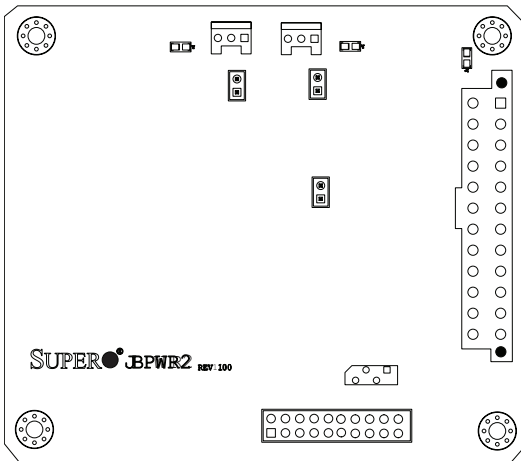
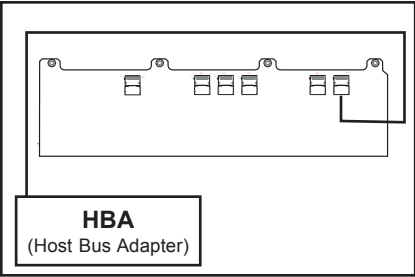


Figure D-5: PCC-JBPWR2 Power Card

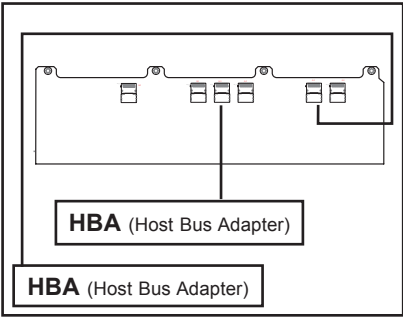
Power Card		
Part Number	Part Type	Where Used
CSE-PTJBOD-CB1	Power Card	Allows the chassis to be in a JBOD (Just a Bunch of Drives) configuration.

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the HBA to the backplane.



Single Internal Host Bus Adapter



Dual Internal Host Bus Adapter

Supported Internal HBA to Backplane Cables

Use the following listed cables to create connections between the internal HBA and backplane. The cables required depend on the HBA connector.



Figure D-6: iPass to 4-lane Cable (CBL-0117)

Cable Name: iPass to 4-Lane

Part #: CBL-0117

Length: 46 cm (18 inches)

Description: This cable has one SFF-8484 (32 pin) connector on one end and iPass (SFF-8087/mini-sas) connector (36 pins) at the other. This cable connects from the HBA to the SAS-936EL backplane.



Figure D-7: iPass (Mini SAS) to iPass (Mini SAS) (CBL-0110L-2)

Cable Name: iPass (mini SAS) TO iPass (mini SAS)

Part #: CBL-0108L-02

Length: 39 cm (15 inches)

Part #: CBL-0109L-02

Length: 22 cm (9 inches)

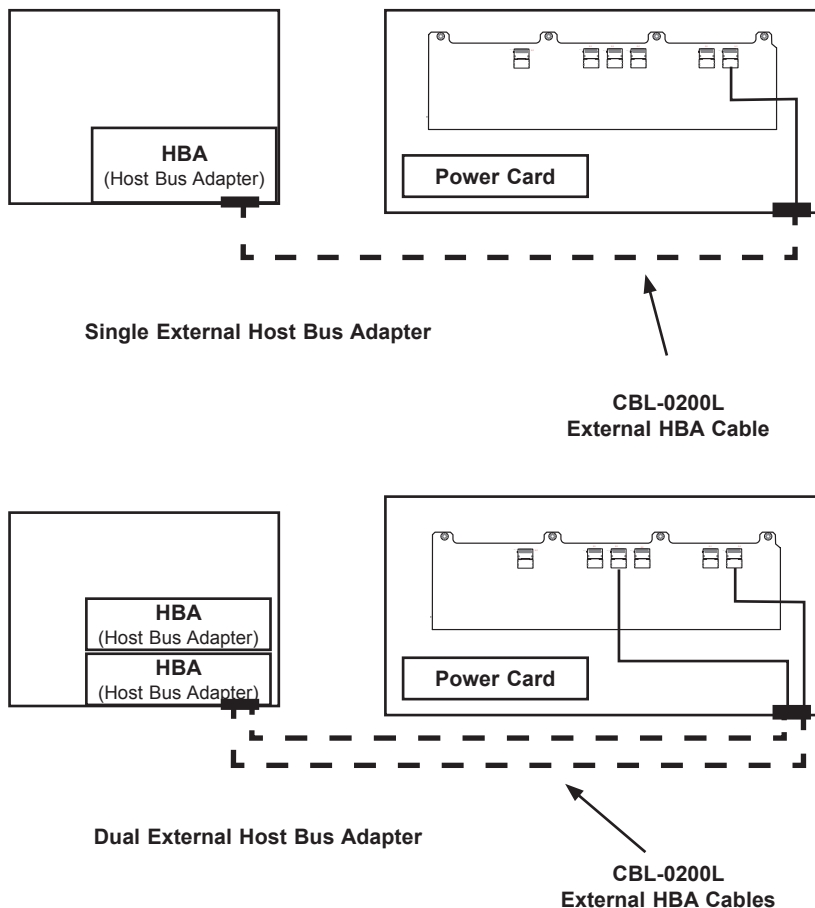
Part #: CBL-0110L-02

Length: 18 cm (7 inches)

Description: This cable has an iPass (SFF-8087/mini-sas) connector (36 pins) at each end. It connects from the HBA to the SAS-936EL backplane.

Connecting an External Host Bus Adapter to the Backplane

This backplane supports external Host Bus Adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD (Just a Bunch Of Drives) configuration from an existing system.



Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an Infiniband connector.



Figure D-8: SAS InfiniBand to Mini SAS (CBL-0200L)

Cable Name: SAS InfiniBand to Mini SAS X4 1M cable, PBF

Part #: CBL-0200L

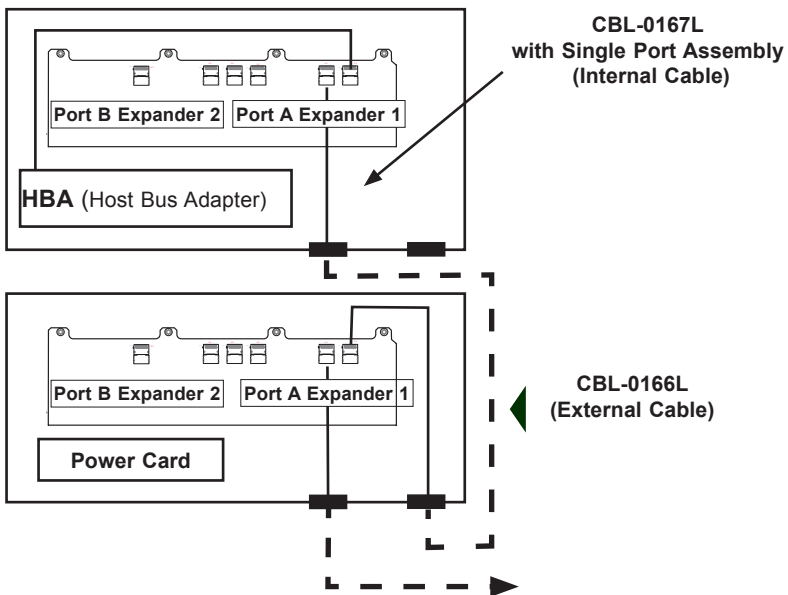
Length: 1 meter

Description: This cable has an Infiniband connector (SFF-8470) on one end and an SFF-8088-1X (26-pins) at the other end.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0167L internal cables and CBL-0166L external cables.

Single HBA Conguration



Single HBA Configuration Cables

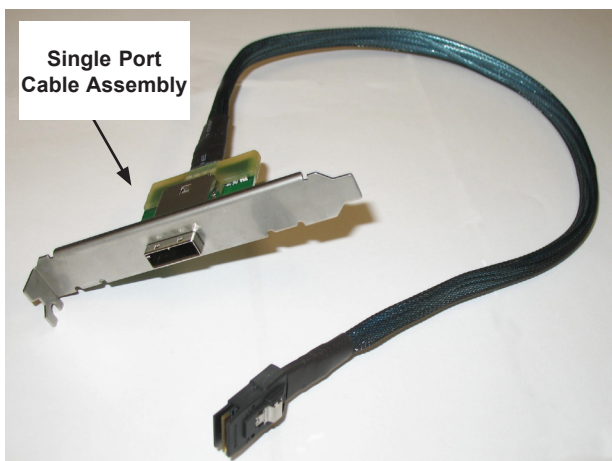


Figure D-9: SAS Internal Backplane Cable (CBL-0167L)

Cable Name: SAS EL2/EL1 Backplane Cable (Internal) w/ 2-port Cascading Cable, 68 cm

Part #: CBL-0167L (SFF-8087 to SFF-8088 x1)

Ports: Single **Placement:** Internal cable

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.



Figure D-10: SAS Cascading Cable External (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)

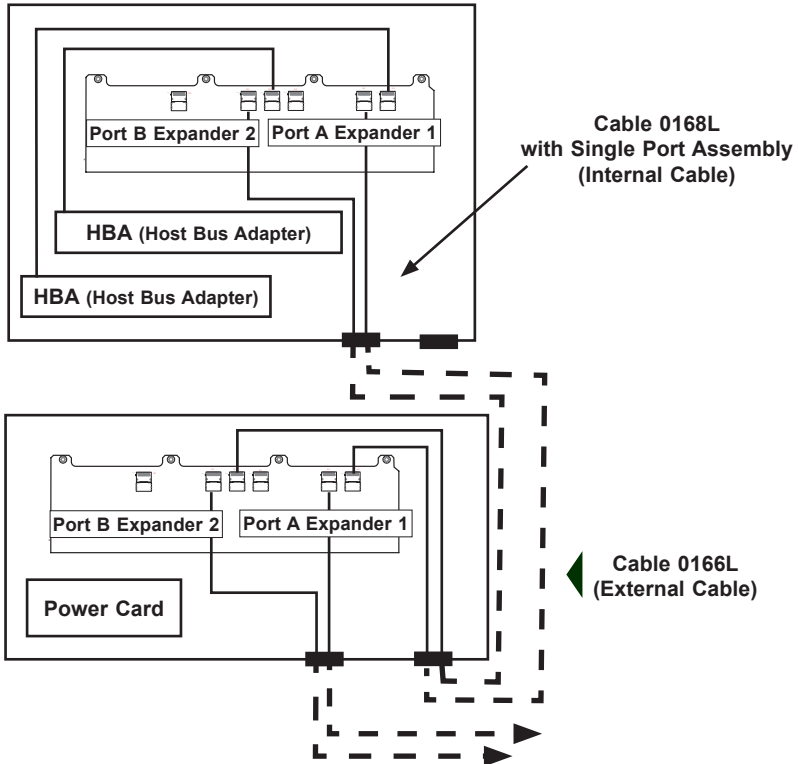
Ports: Single or Dual

Placement: External cable

Description: External cascading cable. Connects ports between servers with most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0168L internal cables and CBL-0166L external cables.



Dual HBA Conguration Cables

Dual Port Cable
Assembly



Figure D-11: SAS Cascading Cable Internal (CBL-0168L)

Cable Name: SAS Dual-port Cable Assembly, 68/76cm

Part #: CBL-0168L

Placement: Internal cable

Ports: Dual

Description: Internal cascading cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in Dual port environments.



Figure D-12: SAS Cascading Cable External (CBL-0166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L

Placement: External cable

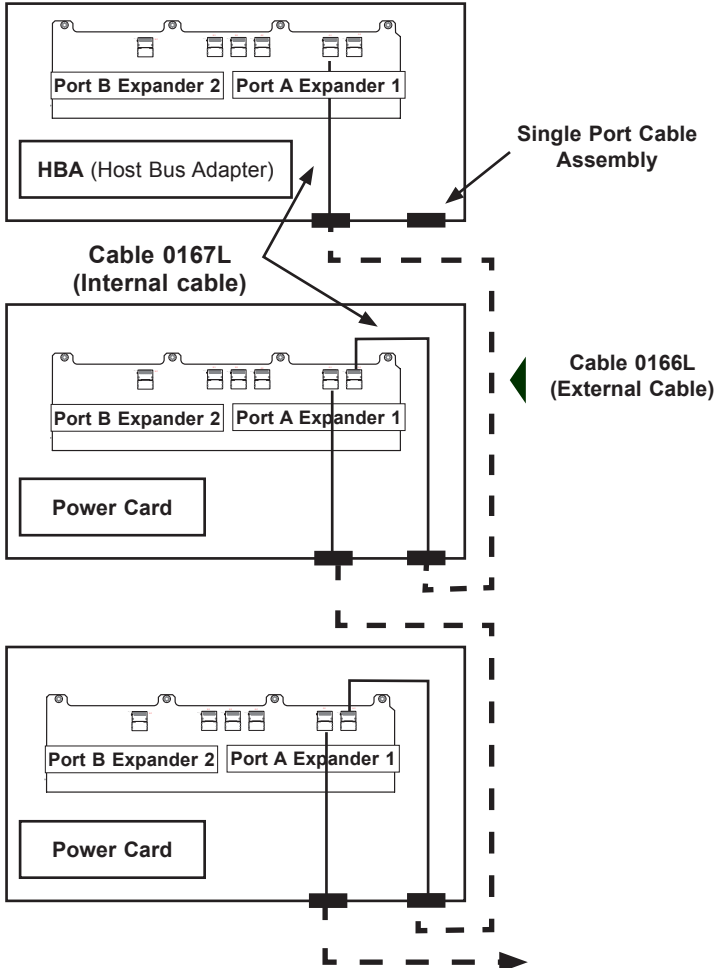
Ports: Single or Dual

Description: External cascading cable. Connects ports between servers. Use one cable for single port connections and two cables for dual port connections.

3-4 Supported Cascading Configurations

Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

The first backplane in a cascaded system requires a motherboard and HBA. Other servers require a power control card, not a motherboard and HBA. For more information, see the SC936 chassis manual.

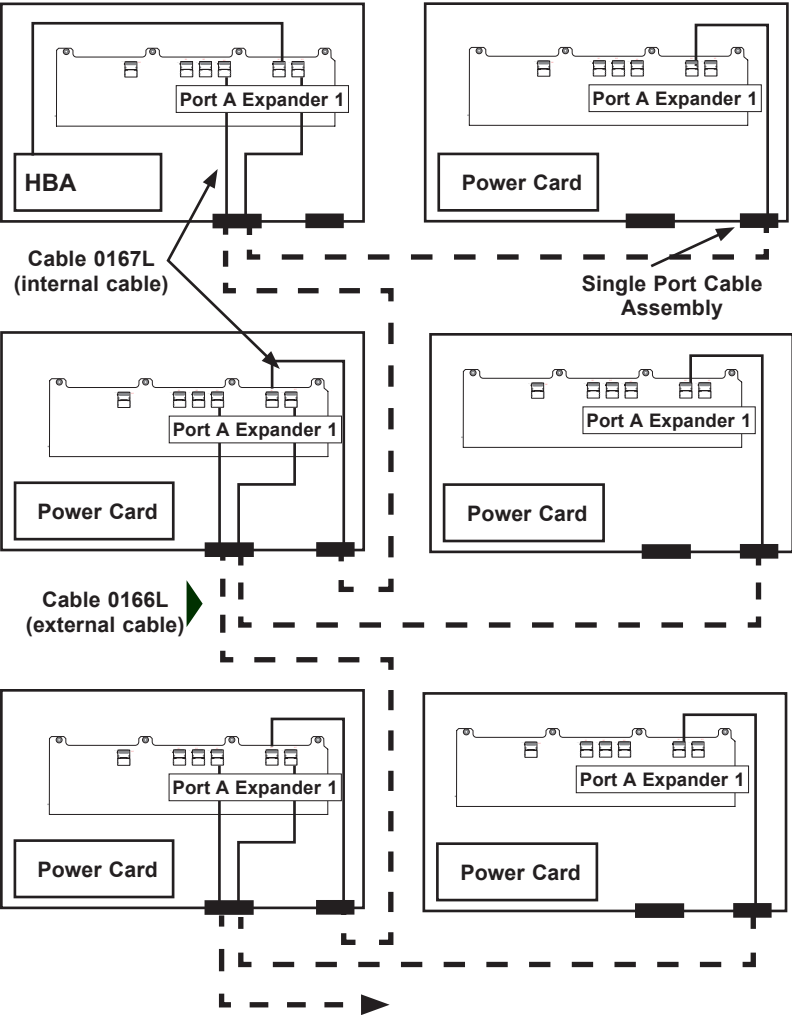


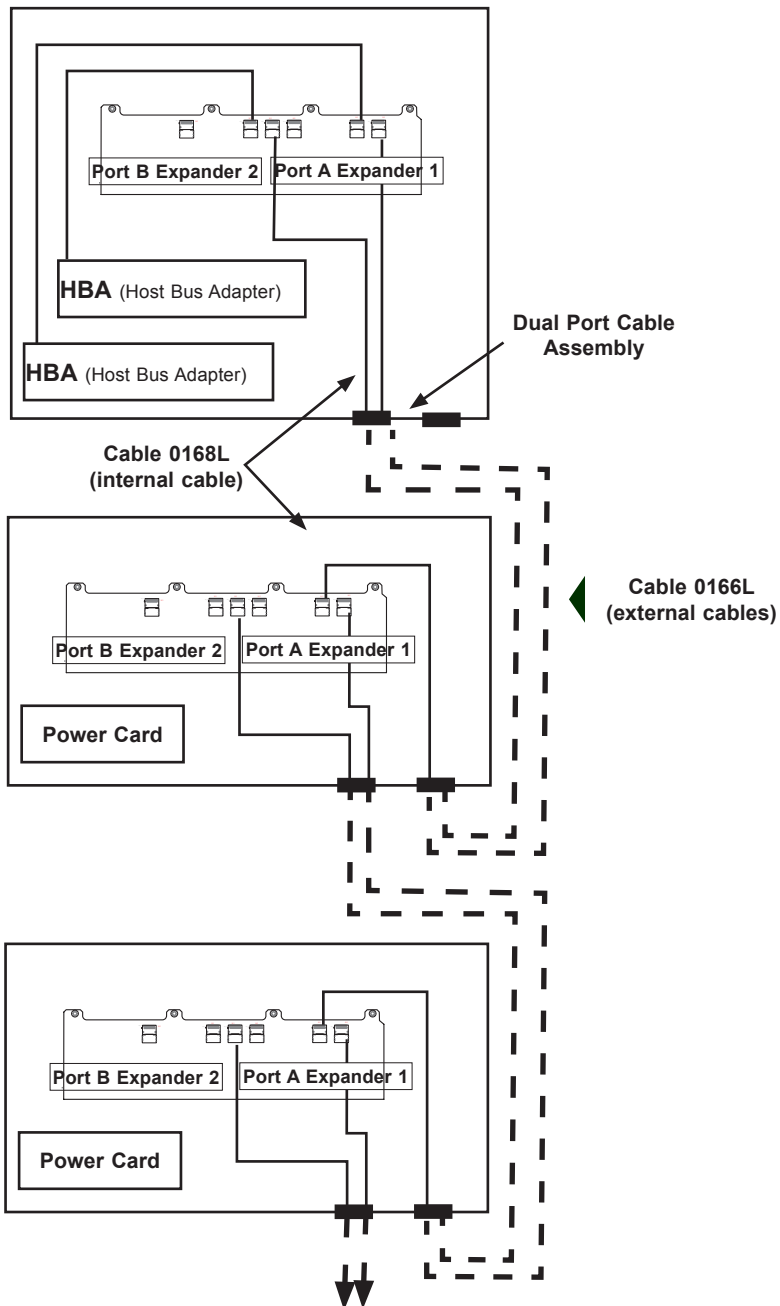
Other Considerations:

- Cascading supports up to 122 hard drives
- Use the same cables for all single port configurations

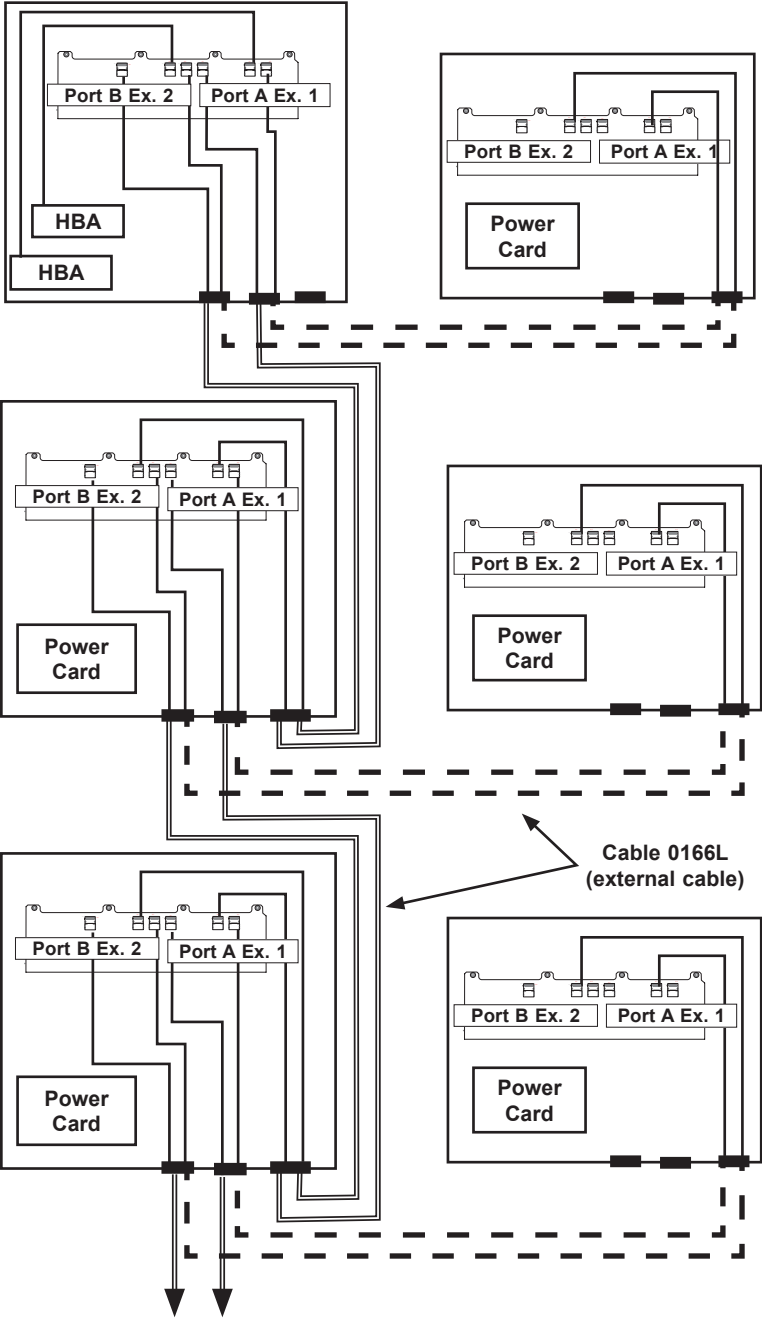
Server System with Single SAS HBA

The exanders allow horizontal branching. This configuration also applies to dual ports.



Server System with Dual SAS HBA and Cascading Configuration

Server System with Dual SAS HBA



Dual Cable Routing

External Cables

In the previous diagrams external cables are represented with two different lines. These cables are both CBL-0166L external cables. Different lines help the user determine cable routing.



CBL-0166L
(External cable)

Disclaimer (cont.)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.